Exhibit 21

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Paper 57
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SINGULAR COMPUTING LLC,
Patent Owner.

IPR2021-00179
Patent 8,407,273 B2

Before JUSTIN T. ARBES, STACEY G. WHITE, and JASON M. REPKO, *Administrative Patent Judges.*

PER CURIAM.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Dismissing Patent Owner's Motion to Exclude
37 C.F.R. § 42.64
Granting Patent Owner's and Petitioner's Motions to Seal
37 C.F.R. §§ 42.14, 42.54

are in these claims" and stating that he has no opinion "about what the TPUs . . . might have in addition"). We find that a presumption of nexus is inappropriate with respect to the TPU products.

Regardless of whether a presumption of nexus applies, we are not persuaded that Patent Owner has made a sufficient showing of nexus for two reasons. First, Patent Owner's nexus arguments are premised on the TPUv2 and TPUv3 products' "low-precision" bfloat16 floating point format having an 8-bit exponent and 7-bit mantissa. PO Resp. 56–57 (arguing that Petitioner copied Dr. Bates's invention by implementing "execution units designed to perform operations using" the bfloat16 format), 61 (arguing commercial success due to the bfloat16 format using "low-precision multipliers"). But "[l]ow-precision arithmetic—including LPHDR multiplication—was not novel" and thus, cannot be the basis for a finding of nexus. *See* Reply 20; *Kao*, 639 F.3d at 1068; *Tokai Corp. v. Easton Enterprises, Inc.*, 632 F.3d 1358, 1369 (Fed. Cir. 2011) ("If commercial success is due to an element in the prior art, no nexus exists."). Tong taught such a format nine years before the '273 patent. Tong describes two different experiments emulating "different bitwidth FP units": one that "implements the IEEE-754 standard" and then varies the mantissa bitwidth (shown in Figure 6), and another that "implements the IEEE-754 standard" and then varies the exponent bitwidth (shown in Figure 7). Ex. 1008, 278–279. Thus, we agree with Mr. Goodin that a person of ordinary skill in the art "would have understood that Tong's Figure 6 . . . discloses a floating-point format with an 8-bit exponent (which is the exponent size of single-precision floating-point in the IEEE standard) . . . and a 7-bit mantissa." *See* Ex. 1071 ¶ 74 (citing Ex. 1008, 274, 278–279; Ex. 1003 ¶ 330). Tong discloses that the 8-bit exponent/7-bit mantissa format